REMARKS

Claims 1, 2, 4-7, 9-14 and 20-23 are pending in this application. By this Amendment, claims 1, 2, 4, 5, 7, 9-14, 21 and 23 are amended, claims 15-19 are canceled as being drawn to a non-elected invention, claim 22 is canceled without prejudice or disclaimer of the subject matter contained therein, and claims 24-32 are added. Favorable reconsideration is respectfully requested in light of the following Remarks.

I. Formal Matters

The Office action objects to the Title of the Invention because it includes the word "improved." By this Amendment, the Title of the Invention is amended from "Improved Propeller Shaft" to "Propeller Shaft Assembly With Stiffening Feature." As suggested by the Examiner, the word "improved" is deleted, even though the word "improved" is not considered as part of the Title of the Invention. *See MPEP§606.* Withdrawal of the objection is respectfully requested.

II. The Claims Define Patentable Subject Matter

1. The Office action rejects Claims 1, 6, 7, 9, 10, 14, 22 and 23 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 3,286,487 to Esperson. The rejection is respectfully traversed.

Esperson discloses a propeller shaft assembly including a substantially cylindrical central driving shaft 2, a tubular casing 8, and one or more intermediate bearings 14 provided between the shaft 2 and the inner surface of the casing 8. Instead of bearings 14, the space between the shaft 2 and the inner surface of the casing 8 may be filled with foamed plastic material. *See Fig. 2; col. 2, lines 66-69.*

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described in a single prior art reference. *See MPEP §2131.* Contrary to the Office action that all of the elements of Claims 1, 9 and 14 are disclosed in Esperson, at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a

cylindrical cavity within the tubular member, and an outer surface defined by an invariable outside diameter, is not disclosed, taught or suggested in Esperson, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claims 1, 9 and 14 are allowable over the applied art. Claims 6, 7, 10, 22 and 23, which depend from Claims 1, 9 and 14, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

2. The Office action rejects Claims 1, 6, 7, 9, 10, 14, 22 and 23 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,397,272 to Smiley et al. (hereinafter "Smiley"). The rejection is respectfully traversed.

Smiley discloses a propeller shaft assembly including a tubular portion 10 that contains a filler material 38. *See Fig. 6; col. 4, lines 5-11.*

There is no mention in Smiley of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular member, as recited in Claims 1, 9 and 14, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claims 1, 9 and 14 are allowable over the applied art. Claims 6, 7, 10, 22 and 23, which depend from Claims 1, 9 and 14, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

3. The Office action rejects Claims 1, 2, 5-7, 9, 10, 12-14, 22 and 23 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 4,560,012 to McNeely, Jr. The rejection is respectfully traversed.

McNeely discloses a drill collar structure including inner and outer tubes 31, 32 with an annular space 33 therebetween. The annular space 33 is filled with rigid, solid material 33a to preclude relative movement between the inner and outer tubes 31, 32. *See Fig. 2; col. 3, lines 59-62.*

Similar to Smiley, there is no mention in McNeely of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular

member, as recited in Claims 1, 9 and 14, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claims 1, 9 and 14 are allowable over the applied art. Claims 2, 5-7, 10, 12, 13, 22 and 23, which depend from Claims 1, 9 and 14, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

4. The Office action rejects Claims 1, 4, 6, 7, 9-11, 14, 22 and 23 under 35 U.S.C. §102(b) as being anticipated by EP 0 471 240 to Schuermann et al. (hereinafter "Schuermann"). The rejection is respectfully traversed.

In the English translation provided by DERWENT, Schuermann discloses a hollow shaft including a shaft part 1 made of plastic, reinforced fibers with cores 3, 4, 5, 6, of which cores 3, 4 are embedded between two fiber layers 7, 8 and the cores 5, 6 represent the inner shroud of the shaft part 1. *See the Figure.* In one embodiment, the outer contour of the shaft part 1 is cambered, while the inner shroud surface is designed with a cylindrical shape having its largest diameter at a point where the shaft part 1 has its greatest thickness. In another embodiment, the shaft part 1 may have a wall thickness that remains the same over its entire length such that both the inner and outer shroud surfaces are curved appropriately. *See Page 3, lines 2-8 of the English translation.*

There is no mention in Schuermann of at least the feature of a tube or tubular member having an outer surface defined by an invariable outside diameter and an inner surface defined by an invariable inside diameter, and a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular member, and an outer surface defined by an invariable outside diameter to engage an interior surface of the tube or tubular member, as recited in Claims 1, 9 and 14, so the rejection is unsupported by the art and should be withdrawn.

For at least this reason, independent Claims 1, 9 and 14 are allowable over the applied art. Claims 2, 4, 6, 7, 10, 11, 22 and 23, which depend from Claims 1, 9 and 14, are likewise allowable over the applied art. Withdrawal of the rejection is respectfully requested.

5. The Office action rejects Claims 2, 5, 12, 13, 20 and 21 under 35 U.S.C. §103(a) over Schuermann. The rejection is respectfully traversed.

Claims 2, 5, 12, 13, 20 and 21 depend from Claims 1 and 9. As mentioned in Paragraph 4 above, there is no mention in Schuermann of at least the feature of a tube or tubular member having an outer surface defined by an invariable outside diameter and an inner surface defined by an invariable inside diameter, and a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular member, and an outer surface defined by an invariable outside diameter to engage an interior surface of the tube or tubular member, as recited in Claims 1 and 9.

In addition, Schuermann teaches away from the claimed invention. Specifically, Schuermann teaches that only the outer contour surface of the shaft part 1 is cambered, while the inner shroud surface is designed with a cylindrical shape. Even if the shaft part 1 had a uniform thickness, Schuermann teaches that both the inner and outer surfaces are curved. *See Page 3, lines 2-8 of the English translation.* Further, Schuermann teaches that it is favorable to provide the largest shaft diameter in the center between the connectors because the greatest bending moment stress acts at this location due to the centrifugal forces and an increase in the bending stiffness of the shaft that could possibly cause the shaft to contact and damage projecting parts close to the shaft. *See Page 3, lines 9-18 of the English translation.* Thus, Schuermann teaches a parabolic-shaped outer contour surface, whereas the outer surface of the tube or tubular member of the claimed invention is defined by an invariable outside diameter. Because Schuermann does not disclose, teach or suggest all the claim limitations, as recited in Claims 1 and 9, the Office action fails to establish a *prima facie* case of obviousness. *See MPEP §2143.*

For at least this reason, independent Claims 2, 5, 12, 13, 20 and 21, which depend from Claims 1 and 9, are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

6. The Office action rejects Claims 2, 5, 12, 13, 20 and 21 under 35 U.S.C. §103(a) over Esperson and Smiley. The rejection is respectfully traversed.

Claims 2, 5, 12, 13, 20 and 21 depend from Claims 1 and 9. As mentioned in Paragraphs 1 and 2 above, there is no mention in Esperson of at least the feature of a tubular support member

disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular member, and an outer surface defined by an invariable outside diameter, as recited in Claims 1 and 9. Specifically, Esperson teaches that the bearings 14 are needed to limit the relative movement between the central shaft 2 and the casing 8 to oppose undesirable whip motion in the central shaft 2. *See col. 2, lines 28-32; lines 50-56.* A cylindrical cavity formed by the inner surface of the bearings 8 would render the Esperson device inoperable. Thus, there is no suggestion or motivation to modify the Esperson device to meet the claimed invention.

Similarly, Smiley teaches that the filler material 38 completely fills the inside of the tubular portion 10. *See Fig. 6.* There is no teaching or suggestion to modify the Smiley shaft to form a cylindrical cavity within the tubular member, as recited in the claimed invention. Because Esperson and Smiley does not disclose, teach or suggest all the claim limitations, as recited in Claims 1 and 9, the Office action fails to establish a *prima facie* case of obviousness.

For at least this reason, independent Claims 2, 5, 12, 13, 20 and 21, which depend from Claims 1 and 9, are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

7. The Office action rejects Claims 20 and 21 under 35 U.S.C. §103(a) over McNeely. The rejection is respectfully traversed.

Claims 20 and 21 depend from Claim 1. As mentioned in Paragraph 3 above, there is no mention in McNeely of at least the feature of a tubular support member disposed within a tubular member and having an inner surface defined by an invariable inside diameter, the inner surface forming a cylindrical cavity within the tubular member, as recited in Claim 1.

In addition, McNeely teaches that the filler material 33a is disposed between the tubes 31, 32. Both tubes 31, 32 are needed to retain the filler material 33a therebetween. To remove the tube 31 would render the McNeely device inoperable. Thus, there is no suggestion to modify the McNeely drill collar to meet the claimed invention. Because McNeely does not disclose, teach or suggest all the claim limitations, as recited in Claim 1, the Office action fails to establish a *prima facie* case of obviousness.

For at least this reason, independent Claims 20 and 21, which depend from Claim 1, are allowable over the applied art. Withdrawal of the rejection is respectfully requested.

CONCLUSION

In view of the above amendments and remarks, each of the presently pending claims in the application is believed to be in immediate condition for allowance. Accordingly, it is respectfully requested that this application be passed to issue.

Applicant believes all fees due with this response have been submitted in the attached petition. However, if any other fees are due, please charge our Deposit Account No. 07-1360, under Order No. G00352/US from which the undersigned is authorized to draw.

Respectfully submitted,

GKN Driveline North America, Inc.

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By _____

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